E/ECE/324
E/ECE/TRANS/505 } Rev.1/Add.79/Amend.1

5 May 1998

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM TECHNICAL PRESCRIPTIONS FOR WHEELED VEHICLES, EQUIPMENT AND PARTS WHICH CAN BE FITTED AND/OR BE USED ON WHEELED VEHICLES AND THE CONDITIONS FOR RECIPROCAL RECOGNITION OF APPROVALS GRANTED ON THE BASIS OF THESE PRESCRIPTIONS */

(Revision 2, including the amendments entered into force on 16 October 1995)

Addendum 79: Regulation No. 80

Amendment 1

01 series of amendments - Date of entry into force: 8 February 1998

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF SEATS OF LARGE PASSENGER VEHICLES AND OF THESE VEHICLES WITH REGARD TO THE STRENGTH OF THE SEATS AND THEIR ANCHORAGES

UNITED NATIONS

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*/ Former title of the Agreement:

Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

GE.98- 21161

Contents.:

Item 6., amend to read:

"6. Requirements for seat anchorages of a vehicle type ....."

Insert a new item 7., to read:

"7. Requirements for installation of seats in a vehicle type....."

Items 7 to 11 (former), renumber as items 8 to 12.

Insert the titles of new Appendices 1 to 6, to read:

"Appendix 1 - Test procedures for seats according to paragraph 5 and/or anchorages according to paragraph 6.1.2

Appendix 2 - Test procedures for the anchorages of a vehicle in application of paragraph 6.1.1.

Appendix 3 - Measurements to be made.

Appendix 4 - Determination of acceptability criteria

Appendix 5 - Static test requirements and procedures

Appendix 6 - Energy absorption characteristics of the rear part of seat backs."

Titles of annexes 4 to 7, should be deleted.

The title of Annex 8., renumber as annex 4.

Text of the Regulation:

Paragraphs 1 to 2.3., replace by the following text (inserting also a new footnote */):

"1. Scope

1.1. This Regulation applies to seats in vehicles of categories M2 and M3 */, except vehicles of class I, as defined in paragraph 2.1.1. of Regulation No. 36 and class A, as defined in paragraph 2.1.1. of Regulation No. 52, in respect of:

1.1.1. Every passenger seat intended to be installed facing forwards;

1.1.2. The seat anchorages provided in the vehicle and intended to be fitted with the seats indicated in paragraph 1.1., or any other type of seat likely to be fitted on these anchorages.

1.2. As an alternative to this Regulation and at the request of the manufacturer vehicles of category M2 may be approved to Regulation No. 17, paragraph 5.2.

1.3. Vehicles where some seats benefit from the derogation provided in paragraph 7.4. to Regulation No. 14 shall be approved to this Regulation.

2. DEFINITIONS

For the purposes of this Regulation:

2.1. "Approval of a seat" means an approval of a seat type as a component in relation to the protection of the occupants of forward-facing seats with regard to their strength and the design of the seat backs;

2.2. "Approval of a vehicle" means an approval of a vehicle type with regard to the strength of the parts of the vehicle structure to which seats are to be secured, and with regard to the installation of seats;

2.3. "Seat type" means seats which do not differ essentially with respect to the following characteristics likely to affect their strength and their aggressiveness:

(Note: Paragraphs 2.3.1. to 2.3.3., not modified)

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*/ As defined in the Consolidated resolution on the Construction of vehicles (R.E.3), Annex 7 (document TRANS/WP.29/78/Rev.1)"

Paragraph 2.4., amend to read:

"2.4 "Vehicle type" means vehicles which do not differ essentially in respect of:

2.4.1. the constructional features relevant to this Regulation; and,

2.4.2. the type or types of type approved seat(s) fitted to the vehicle, if any."

Paragraph 2.12., amend to read:

"..... to be displaced laterally or longitudinally without a fixed intermediate position ....."

Paragraph 2.17., amend to read:

"2.17. "Auxiliary seat" means a seat for the manikin mounted on the trolley to the rear of the seat to be tested. This seat shall be representative of the seat to be used in the vehicle behind the seat to be tested."

Paragraph 2.18., amend the reference to "annex 8" to read "annex 4".

Paragraph 2.20. and footnote 1/ pertinent to this paragraph, amend to read:

"2.20. "Manikin", a manikin corresponding to the specifications for HYBRID II or III 1/.

1/ The technical specifications and detailed drawings of HYBRID II and III, corresponding to the principal dimensions of the fiftieth percentile male of the United States of America, and the specifications for its adjustment for this test are deposited with the Secretary-General of the United Nations and may be consulted on request at the secretariat of the Economic Commission for Europe, Palais des Nations, Geneva, Switzerland."

(Note by the secretariat: For Hybrid III only the description without drawings is available (TRANS/WP.29/GRSP/18, para.8).)

Insert new paragraphs 2.21. to 2.23., to read:

"2.21. "Reference zone", means the space between two vertical longitudinal planes, 400 mm apart and symmetrical with respect to the H-point, and defined by rotation from vertical to horizontal of the head-form apparatus, described in Regulation No. 21, annex 1. The apparatus shall be positioned as described in that annex to Regulation No. 21 and set to the maximum length of 840 mm.

2.22. "3-point belt" for the purposes of this Regulation also includes belts with more than three anchorage points.

2.23. "Seat spacing" means, in the case of seats facing in the same direction, the distance between the front of a seat squab and the back of the seat squab of the seat preceding it, measured horizontally at the height of 620 mm above the floor."

Paragraph 4.2., amend to read:

"..... of paragraphs 6 and 7 below....".

Paragraph 4.3., amend to read:

"..... Its first two digits (at present 01, corresponding to the 01 series of amendments) shall indicate the series ....."

Paragraph 4.5.1., footnote 2/, amend to read:

"2/ 1 for Germany, ...8 for the Czech Republic, ...15 (vacant), ... 22 for the Russian Federation, 23 for Greece, 24 (vacant), 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30(vacant), 31 for Bosnia and Herzegovina, 32-36 (vacant) and 37 for Turkey. Subsequent numbers....."

Paragraphs 4.5.3., 4.5.3.1. and 4.5.3.2., should be deleted.

Paragraphs 5 to 6.4., replace by the following text (paragraphs 5. to 7.3.2.2.):

"5. REQUIREMENTS FOR SEATS

5.1. Each type of seat shall be subject to the test requirements of either appendix 1 (dynamic test) or appendices 5 and 6 (static test) at the request of the manufacturer.

5.2. The tests which the seat type has passed shall be recorded in the communication form concerning the approval of a seat type and conforming to the model in annex 1.

5.3. Every adjustment and displacement system provided shall incorporate a locking system, which shall operate automatically.

5.4. The adjustment and locking systems shall not be required to be in full working order after the test.

6. REQUIREMENTS FOR SEAT ANCHORAGES OF A VEHICLE TYPE

6.1. The anchorages for the seats of the vehicle shall be capable of withstanding:

6.1.1. either the test described in appendix 2;

6.1.2. or, if a seat is mounted on the part of the vehicle structure being tested, the tests prescribed in appendix 1. The seat need not to be an approved seat provided that it satisfies the requirements of paragraph 3.2.1 of the above mentioned appendix.

6.2. Permanent deformation, including breakage, of an anchorage or of the surrounding area shall be permissible provided that the prescribed force has been sustained throughout the prescribed period.

6.3. When there is more than one type of anchorage on a vehicle, each variant shall be tested in order to obtain an approval for the vehicle.

6.4. One test may be used to approve simultaneously a seat and a vehicle.

6.5. In the case of vehicles of category M3, seat anchorages shall be deemed to comply with the requirements of paragraphs 6.1 and 6.2 if the safety-belt anchorages of the corresponding seating positions are fitted directly to the seats to be installed and these belt anchorages comply with the requirements of Regulation No. 14, if necessary with the derogation provided in paragraph 7.4.

7. REQUIREMENTS FOR INSTALLATION OF SEATS IN A VEHICLE TYPE

7.1. All forward-facing seats installed shall be approved to the requirements of paragraph 5 of this Regulation and subject to the following conditions:

7.1.1. the seat shall have a reference height of at least 1 m; and

7.1.2. the H-point of the seat immediately behind shall be less than 72 mm higher than the H-point of the seat in question or, if the seat behind has the H-point more than 72 mm higher, the seat in question shall be tested and approved for installation in such a position.

7.2. When approved to appendix 1, test 1 and 2 shall apply, except as follows:

7.2.1. Test 1 shall not apply where the rear of the seat cannot be struck by an unrestrained passenger (i.e. there is no forward-facing seat directly behind the seat to be tested).

7.2.2. Test 2 shall not apply

7.2.2.1. if the rear of the seat cannot be struck by a restrained passenger; or

7.2.2.2. if the seat behind is fitted with a 3-point belt with anchorages that comply fully with Regulation No. 14 (without derogation); or

7.2.2.3. if the seat fulfils the requirements of appendix 6 to this Regulation.

7.3. When approved to appendices 5 and 6, all tests shall apply, except as follows:

7.3.1. The test of appendix 5 shall not apply if the rear of the seat cannot be struck by an unrestrained passenger (i.e. there is no forward-facing seat directly behind the seat to be tested).

7.3.2. The test of appendix 6 shall not apply:

7.3.2.1. if the rear of the seat cannot be struck by a restrained passenger; or

7.3.2.2. if the seat behind is fitted with a 3-point belt with anchorages that comply fully with Regulation No. 14 (without derogation).*

Paragraph 7. (former), renumber as paragraph 8., and amend to read:

"8. CONFORMITY OF PRODUCTION

The conformity of production procedures shall comply with those set out in the Agreement, appendix 2 (E/ECE/324-E/ECE/TRANS/505/Rev.2), with the following requirements:"

Paragraph 7.1. (former), renumber as paragraph 8.1 and amend the reference to "paragraphs 5. and 6." to read "paragraphs 5, 6 and 7".

Paragraph 7.2. (former), renumber as paragraph 8.2. and amend the reference to "paragraph 7.1." to read "paragraph 8.1."

Paragraphs 7.3. to 7.3.3. (former), should be deleted.

Paragraph 7.4., renumber as paragraph 8.3., and amend to read:

"..... carried out for the approval. The normal frequency of these verifications shall be once a year."

Paragraph 7.5. (former), should be deleted.

Paragraphs 8. to 10. (former), renumber as paragraphs 9. to 11.

Insert new appendices 1 to 6, to read:

Insert new paragraphs 12. to 12.3., to read:

"12. TRANSITIONAL PROVISIONS

12.1. As from the official date of entry into force of the 01 series of amendments, no Contracting Party applying this Regulation shall refuse to grant ECE approvals under this Regulation as amended by the 01 series of amendments.

12.2. As from 1 October 1999 for vehicles of category M_2 with a maximum mass not exceeding 3,500 kg, and as from the sixtieth day after the entry into force of the 01 series of amendments to this Regulation for vehicles of category M_3, Contracting Parties applying this Regulation shall grant ECE approvals only if the requirements of this Regulation, as amended by the 01 series of amendments, are satisfied.

12.3. As from 1 October 2001 for vehicles of category M_2 with a maximum mass not exceeding 3,500 kg, and as from 1 October 1999 for vehicles of category M_3, Contracting Parties applying this Regulation may refuse to recognize approvals which were not granted in accordance with the 01 series of amendments to this Regulation."

Paragraph 11. (former), renumber as paragraph 13.

"Appendix 1

TEST PROCEDURES FOR SEATS ACCORDING TO PARAGRAPH 5 AND/OR ANCHORAGES ACCORDING TO PARAGRAPH 6.1.2.

1. Requirements

1.1. The tests are to determine:

1.1.1. If the seat occupant(s) is (are) correctly retained by the seat(s) in front of him (them) and/or by the use of a safety belt.

1.1.1.1. This requirement shall be considered satisfied if the forward movement of any part of the trunk and the head of the manikin does not pass beyond the transversal vertical plane situated at 1.6 m from the R point of the auxiliary seat;

1.1.2. If the seat occupant(s) is (are) not seriously injured.

1.1.2.1. This requirement shall be considered satisfied if the following biomechanical acceptability criteria for the instrumented manikin, determined in accordance with Appendix 4, are met; that is:

1.1.2.1.1. the head acceptability criterion HIC is less than 500;

1.1.2.1.2. the thorax acceptability criterion (ThAC) is less than 30g except for periods totalling less than 3 ms (g = 9.81 m/s);

1.1.2.1.3. the femur acceptability criterion (FAC) is less than 10kN and the value of 8 kN is not exceeded for periods totalling more than 20 ms;

1.1.3. If the seat and the seat mountings are strong enough.

1.1.3.1. This requirement shall be considered satisfied if:

1.1.3.1.1. no part of the seat, the seat mountings or the accessories becomes completely detached during the test;

1.1.3.1.2. the seat remains firmly held, even if one or more anchorages are partly detached, and all the locking systems remain locked during the whole duration of the test;

1.1.3.1.3. after the test no structural part of the seat or accessories has any fracture or sharp or pointed edges or corners likely to cause any bodily injury.

1.2. All fittings forming part of the back of the seat or accessories thereto shall be such as to be unlikely to cause any bodily injury to a passenger during impact. This requirement shall be considered satisfied if any part contactable by a sphere 165 mm in diameter presents a radius of curvature of at least 5 mm.

1.2.1 If any part of the fittings and accessories referred to above is made of a material of hardness less than 50 Shore A on a rigid backing, the requirements set out in paragraph 1.1.3.1.3 above shall apply only to the rigid backing.

1.2.2. The parts of the back of the seat such as adjustment devices for the seat and accessories shall not be subject to any requirements of paragraph 1.1.3.1.3 if in the position of rest they are situated below a horizontal plane 400 mm above the reference plane, even if the occupant might enter into contact with them.

2. Preparation of the seat to be tested

2.1. The seat to be tested shall be mounted:

2.1.1. either on a testing platform representative of the body of a vehicle,

2.1.2. or on a rigid testing platform.

2.2. The anchorage on the testing platform provided for the test seat(s) shall be identified to or have the same characteristics as that used in vehicle(s) in which the seat is intended to be used.

2.3. The seat to be tested shall be complete with all upholstery and accessories. If the seat is fitted with a table, it shall be in the stowed position.

2.4. If adjustable laterally, the seat shall be positioned for maximum extension.

2.5. If adjustable, the seat back shall be adjusted so that the resulting inclination of the torso of the manikin used for determining the H-point and the actual torso angle for seating positions in motor vehicles is as close as possible to that recommended by the manufacturer for normal use or, in the absence of any particular recommendation by the manufacturer, as near as possible to 25° towards the rear in relation to the vertical.

2.6 If the seat back is equipped with a head restraint adjustable for height, it shall be in its lowest position.

2.7. Safety-belts of an approved type, conforming to Regulation No. 16 and mounted on anchorages installed according to Regulation No. 14 (including, if appropriate, the derogation provided in paragraph 7.4 to that Regulation) shall be fitted to both the auxiliary seat and the seat to be tested.

3. Dynamic tests

3.1. Test 1

The testing platform shall be mounted on a trolley.

3.2. Auxiliary seat

The auxiliary seat may be of the same type as the seat being tested and shall be located parallel to and directly behind the seat being tested. The two seats shall be at the same height, adjusted identically and on a seat spacing of 750 mm.

3.2.1. If an auxiliary seat of a different type is used this shall be mentioned in the communication form concerning the approval of a seat type and conformity to the model in annex 1 to this Regulation.

3.3. Manikin

3.3.1. The manikin shall be placed unrestrained on the auxiliary seat so that its plane of symmetry corresponds to the plane of symmetry of the seating position in question.

3.3.2. The manikin's hands shall rest on its thighs with the elbows touching the seat back; the legs shall be extended to the maximum and shall, if possible, be parallel; the heels shall touch the floor.

3.3.3. Each manikin required shall be installed on a seat in accordance with the following procedure:

3.3.3.1. the manikin shall be placed on the seat as close as possible to the desired position,

3.3.3.2. a flat rigid surface 76 mm x 76 mm in area shall be placed as low as possible against the front of the manikin's torso,

3.3.3.3. the flat surface shall be pressed horizontally against the manikin's torso at a load of between 25 and 35 daN:

3.3.3.3.1. the torso shall be drawn forward by the shoulders to the vertical position, then laid back against the seat back. This operation shall be performed twice;

3.3.3.3.2. without the torso moving, the head shall be placed in a position such that the platform supporting the measuring instruments contained in the head is horizontal and that the median sagittal plane of the head is parallel to that of the vehicle.

3.3.3.4. the flat surface be carefully removed,

3.3.3.5. the manikin shall be moved forward on the seat and the installation procedure described above repeated,

3.3.3.6. if necessary, the position of the lower members shall be corrected,

3.3.3.7. the measuring instruments installed shall not in any way affect the movement of the manikin during impact,

3.3.3.8. the temperature of the system of measuring instruments shall be stabilised before the test and maintained so far as possible within a range between 19° and 26°C.

3.4. Impact simulation

3.4.1. The impact speed of the trolley shall be between 30 and 32 km/h.

3.4.2. The deceleration of the trolley during the impact test shall be in accordance with the provisions shown in Figure 1 below. Except for intervals totalling less than 3 ms, the deceleration time history of the trolley shall remain between the limit curves shown in Figure 1.

3.4.3. Furthermore, the average deceleration shall be comprised between 6.5 and 8.5g.

3.5. **Test 2**

3.5.1. Test 1 shall be repeated with a manikin seated in the auxiliary seat: the manikin shall be restrained by a safety-belt fitted and adjusted in accordance with the manufacturer's instructions. The number of safety-belt anchorage points for the purpose of Test 2 shall be recorded in the communication form concerning the approval of a seat type and conforming to the model in annex 1 to this Regulation.

3.5.2. The auxiliary seat shall be either of the same type as the seat being tested or of a different type, the details of which shall be recorded in the communication form concerning the approval of a seat type and conforming to the model in annex 1 to this Regulation.

Appendix 2

TEST PROCEDURE FOR THE ANCHORAGES OF A VEHICLE IN APPLICATION OF PARAGRAPH 6.1.1.

1. Test apparatus

1.1. A rigid structure sufficiently representative of the seat intended for use on the vehicle is fixed by the means of fixation (bolts, screws, etc.) provided by the manufacturer to the parts of the structure submitted to the tests.

1.2. If several seat types differing from one another in respect of the distance between the front and back ends of their feet can be mounted on the same anchorage, the test shall be carried out with the shortest footing. This footing shall be described on the type-approval certificate.

2. Test procedure

2.1. A force F shall be applied.

2.1.1. at a height of 750 mm above the reference plane and on the vertical line containing the geometrical centre of the surface bounded by the polygon having the different anchorage points as apexes or, if applicable, the extreme anchorages of the seat, by the rigid structure as defined in paragraph 1.1. above;

2.1.2. in the horizontal direction and directed to the front of the vehicle;

2.1.3. in a delay as short as possible and for a duration of at least 0.2s.

2.2. The force F shall be determined either

2.2.1. by the following formula: $F = (5000 \pm 50) \times i$

where:

F is given in N and i represents the number of seating positions of the seat for which the anchorages to be tested are to be approved; or, if requested by the manufacturer,

2.2.2. in accordance with the representative loads measured during dynamic tests as described in appendix 1 to this Regulation.

Appendix 3

MEASUREMENTS TO BE MADE

1. All measurements necessary shall be made with measurement systems corresponding to the specifications of International Standard ISO 6487:1987 entitled "Measurement techniques in impact tests: Instrumentation".

2. Dynamic test

2.1. Measurements to be made on the trolley

The characteristics of the deceleration of the trolley shall be measured, from the accelerations measured on the rigid frame of the trolley, with measurement systems with a CFC of 60.

2.2. Measurements to be made on manikins

The readings of the measuring devices shall be recorded through independent data channels of the following CFC:

2.2.1. Measurements in the head of the manikin

The resultant triaxial acceleration referring to the centre of gravity (γ_r) 1/ shall be measured with a CFC of 600.

2.2.2. Measurements in the thorax of the manikin

The resultant acceleration at the centre of gravity shall be measured with a CFC of 180.

2.2.3. Measurements in the femur of the manikin

The axial compression force shall be measured with a CFC of 600.

1/ Expressed in g (= 9.81 m/s^2) the scalar value of which is calculated according to the following formula:

$$\gamma_r^2 = \gamma_l^2 + \gamma_v^2 + \gamma_t^2$$

where: γ_l = value of instant longitudinal acceleration;
γ_v = value of instant vertical acceleration;
γ_t = value of instant transversal acceleration.

Appendix 4

DETERMINATION OF ACCEPTABILITY CRITERIA

1.1. This injury criterion (HIC) is calculated on the basis of the resultant triaxial acceleration measured according to appendix 3, paragraph 2.2.1. by the following expression:

$$HIC = (t_2 - t_1)\left[\frac{1}{t_2 - t_1}\int_{t_2}^{t_1} a_r\, dt\right]^{2.5}$$

in which t_1 and t_2 are any values of time during the test, HIC being maximum value for and interval t_1, t_2. The values of t_1 and t_2 are expressed in seconds.

2. Thorax acceptability criterion (ThAC)

2.1. This criterion is determined by the absolute value of resultant acceleration, expressed in g and measured according to Appendix 3, paragraph 2.2.2, and by the acceleration period, expressed in ms.

3. Femur acceptability criterion (FAC)

This criterion is determined by the compression load expressed in kN, transmitted axially on each femur of the manikin and measured according to appendix 3, paragraph 2.2.3., and by the duration of the compression load, expressed in ms.

Appendix 5

STATIC TEST REQUIREMENTS AND PROCEDURE

1. Requirements

1.1. The requirements for seats tested according to this appendix are to determine:

1.1.1. If the seat occupants are correctly retained by the seats in front of them;

1.1.2. If the seat occupants are not seriously injured; and

1.1.3. If the seat and the seat mountings are strong enough.

1.2. The requirements of paragraph 1.1.1. above shall be considered satisfied if the maximum displacement of the central of application of each force prescribed in Paragraph 2.2.1 measured in the horizontal plane and in the longitudinal median plane of the relevant seating position does not exceed 400 mm.

1.3. The requirements of paragraph 1.1.2. above shall be considered satisfied if the following characteristics are met:

1.3.1. The maximum displacement of the central point of application of each of the forces prescribed in paragraph 2.2.1, measured as described in paragraph 1.2, is not less than 100 mm;

1.3.2. The maximum displacement of the central point of application of each of the forces prescribed in paragraph 2.2.2, measured as described in paragraph 1.2; is not less than 50 mm.

1.3.3. All fittings forming part of the back of the seat or accessories thereto shall be such as to be unlikely to cause any bodily injury to a passenger during impact. This requirement shall be considered satisfied if any part contactable by a sphere 165 mm in diameter presents a radius of curvature of at least 5 mm.

1.3.4. If any part of the fittings and accessories referred to above is made of a material of hardness less than 50 shore A on a rigid backing, the requirements set out in paragraph 1.3.3. above shall apply only to the rigid backing.

1.3.5. The parts of the back of the seat such as adjustment devices for the seat and accessories shall not be subject to any requirements of paragraph 1.3.3 if in the position of rest they are situated below a horizontal plane 400 mm above the reference plane, even if the occupant might enter into contact with them.

1.4. The requirements of paragraph 1.1.3. shall be considered satisfied if:

1.4.1. No part of the seat, the seat mountings or the accessories becomes completely detached during the test;

1.4.2. The seat remains firmly held, even if one or more anchorages is(are) partly detached, and all the locking systems remain locked during the whole duration of the test;

1.4.3. After the test no structural part of the seat or accessories has any fracture or sharp or pointed edges or corners likely to cause any bodily injury.

2. Static tests.

2.1. Test apparatus

2.1.1. This consists of cylindrical surfaces with a radius of curvature equal to 82 ± 3 mm and a width:

2.1.1.1. at least equal to the width of the seat-back of each seating position of the seat to be tested for the upper form,

2.1.1.2. equal to 320 -0/+10 mm for the lower form as shown in Figure 1 of this appendix.

2.1.2. The surface resting against the parts of the seat shall be made of a material the hardness of which is not less than 80 Shore A.

2.1.3. Each cylindrical surface shall be equipped with at least one force transducer able to measure the forces applied in the direction defined in paragraph 2.2.1.1.

2.2. Test procedure

2.2.1. A test force to $\frac{1,000}{H1}$ ± 50 N shall be applied using a device, conforming to paragraph 2.1. above, to the rear part of the seat corresponding to each seating position of the seat.

2.2.1.1. The direction of application of the force shall be situated in the vertical median plane of the seating position concerned; it shall be horizontal and from the rear towards the front of the seat.

2.2.1.2. This direction shall be situated at the height H1 which shall be between 0.70 m and 0.80 m and above the reference plane. The exact height shall be determined by the manufacturer.

2.2.2. A test force equal to $\frac{2,000}{H2}$ ± 100 N shall be applied simultaneously to the rear part of the seat corresponding to each seating position of the seat in the same vertical plane and in the same direction at the height H2 which shall be between 0.45 and 0.55 m above the reference plane, with a device conforming to paragraph 2.1. above. The exact height shall be determined by the manufacturer.

2.2.3. The test form shall be maintained as far as possible in contact with the rear of the seat during the application of the forces specified in paragraphs 2.2.1 and 2.2.2. above. They shall be able to pivot in a horizontal plane.

2.2.4. Where a seat consists of more than one seating position, the forces corresponding to each seating position shall be applied simultaneously and there shall be as many upper and lower forms as seating positions.

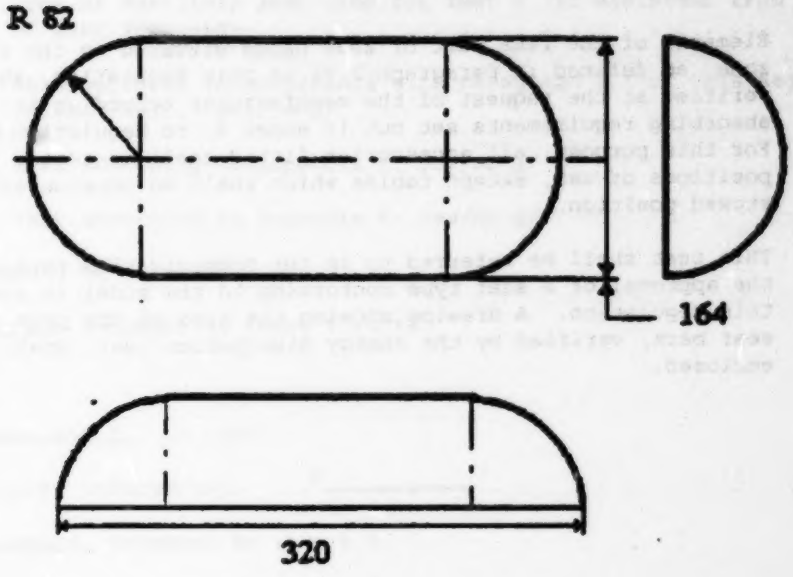
2.2.5. The initial position of each seating position of each of the forms shall be determined by bringing the test devices into contact with the seat with a force equal to at least 20 N.

2.2.6. The forces indicated in paragraphs 2.2.1 and 2.2.2 above shall be applied as rapidly as possible and shall be maintained together at the specified value, whatever the deformation, for at least 0.2 seconds.

2.2.7. If the test has been carried out with one or more forces but not with all forces greater than those specified in paragraphs 2.2.1 and 2.2.2 above and if the seat complies with the requirements, the test shall be considered to be satisfied.

Appendix 5 - Figure 1

STATIC TEST APPARATUS



Appendix 6

ENERGY ABSORPTION CHARACTERISTICS OF THE REAR PART OF SEAT BACKS

1. Elements of the rear part of seat backs situated in the reference zone, as defined in paragraph 2.21 of this Regulation, shall be verified at the request of the manufacturer according to the energy absorbing requirements set out in annex 4, to Regulation No. 21. For this purpose, all accessories fitted shall be tested in all positions of use, except tables which shall be considered in the stowed position.

2. This test shall be referred to in the communication form concerning the approval of a seat type conforming to the model in annex 1 to this Regulation. A drawing showing the area of the part of the seat back, verified by the energy dissipation test, shall be enclosed.

_____"

Annex 1

Insert a new item 5., to read:

"5. Additional information: . . . . . "

Item 5. (former), renumber as item 5.1.

Insert new items 5.2 to 5.9., to read:

"5.2. Position and arrangement of seats: . . . . . .

5.3. Seats, if any, which incorporate a safety belt anchorage: . . . .

5.4. Energy absorption test of the rear part of the seat-back: yes/no 2/

5.5. Drawings showing the area of the rear part of the seat-back verified for energy dissipation: . . . . . .

5.6. Seat approved in accordance with Paragraph 5.1 of this Regulation (dynamic test): yes/no 2/

5.6.1. Test 1 according to Appendix 1: yes/no 2/

5.6.2. Test 2 according to Appendix 1: yes/no 2/

5.6.3. Description of the safety-belts and anchorages used for the purpose of Test 2: . . . . . .

5.6.4. Type of auxiliary seat used for Test 2 (if different from the type of seat approved): . . . . . .

5.7. Seat approved in accordance with paragraph 5.1 of this Regulation (static test): yes/no 2/

5.8. Test according to Appendix 5: yes/no 2/

5.9. Test according to Appendix 6: yes/no 2/"

Item 6., should be deleted

Items 7 to 16., renumber as items 6 to 15.

Annex 2.

Insert a new item 5., to read:

"5. Additional information: . . . . . "

Item 5. (former), renumber as item 5.1.

Insert new items 5.2. to 5.5., to read:

"5.2. Make and type of type approved seats (if any): . . . . . .

5.3. For each row of seats: individual/bench, fixed/adjustable, fixed back/adjustable back, tipping back/inclining back 2/

5.4. Position and arrangement of seats (type approved seats and other seats): . . . . . .

5.5. Seats, if any, which incorporate a safety belt anchorages: . . . . . "

Annex 3

Paragraph 1., amend to read the title:

"1. Arrangement in the approval mark for a seat"

Letter "D" in the example of the approval mark, should be deleted

Amend the caption below the example to read:

".....with regard to the strength of the seats, been approved in the Netherlands (E4) under number....."

in addition, in the examples of the approval marks and in the captions below amend the approval number "002439" to read "012439 (4 times) and the words "in its original form" to read "as amended by the 01 series of amendments" (2 times).

Paragraph 2., should be deleted.

Paragraph 3., renumber as paragraph 2.

Annexes 4 to 7., should be deleted.

Annex 8. (former), renumber as annex 4.